

Need an amazing tutor?

www.teachme2.com/matric



Collected and collated by

teachme2



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**SENIOR CERTIFICATE EXAMINATIONS/
SENIORSERTIFIKAAT-EKSAMEN
NATIONAL SENIOR CERTIFICATE EXAMINATIONS/
NASIONALE SENIORSERTIFIKAAT-EKSAMEN**

**MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2**

MARKING GUIDELINES/NASIENRIGLYNE

2021

MARKS/PUNTE: 150

Symbol/Kode	Explanation/Verduideliking
M	Method/Metode
MA	Method with accuracy/Metode met akkuraatheid
CA	Consistent accuracy/Volgehoue akkuraatheid
A	Accuracy/Akkuraatheid
C	Conversion/Herleiding
S	Simplification/Vereenvoudiging
RT	Reading from a table/a graph/document/diagram/Lees vanaf tabel/grafiek/diagram
SF	Correct substitution in a formula/Korrekte vervanging in formule
O	Opinion/Explanation/Opinie/Verduideliking
P	Penalty, e.g. for no units, incorrect rounding off, etc./Penalisasie, bv. vir geen eenhede/verkeerde afronding, ens.
R	Rounding off/Afronding
NPR	No penalty for rounding/Geen penalisasie vir afronding nie
AO	Answer only/Slegs antwoord
MCA	Method with constant accuracy/Metode met volgehoue akkuraatheid
*	An asterisk next to a question indicates reference to the notes.

**These marking guidelines consist of 21 pages.
Hierdie nasienriglyne bestaan uit 21 bladsye.**

NOTE:

- If a candidate answers a question TWICE, mark only the FIRST attempt.
- If a candidate has crossed out (cancelled) an attempt to a question and NOT redone the solution mark the crossed out (cancelled) version.
- Consistent accuracy (CA) applies in ALL aspects of the marking guidelines, however it stops at the second calculation error.
- No CA mark follows after a breakdown.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- General principal of marking, if the candidate makes one mistake he loses one mark.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou op by die tweede berekeningsfout.*
- *Geen CA-punt volg na 'n afbreking nie.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *Die algemene beginsel van merk as 'n leerder een fout maak verloor hy een punt.*

QUESTION/VRAAG1 [37 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.1	$\text{Number of tins /Getal blikke} = 12 \times 10 = 120 \quad \checkmark\text{MA}$ $\text{No of tins each member gets/Getal wat elke lid kry} = 120 \div 15 \quad \checkmark\text{MA}$ $= 8 \quad \checkmark\text{CA}$	1MA multiplying by 10 1MA dividing by 15 1CA simplification AO (3)	M L2
* 1.1.2	$12,5 \text{ kg} \times 15 = 187,5 \text{ kg} \quad \checkmark\text{M}$ $5 \text{ kg} \times 30 = 150 \text{ kg}$ $0,125 \text{ kg} \times 48 \times 15 = 90 \text{ kg} \quad \checkmark\text{C}$ $10 \text{ kg} \times 15 = 150 \text{ kg}$ $12 \times 0,4 \text{ kg} \times 10 = 48 \text{ kg} \quad \checkmark\text{M}$ $6 \times 15 \text{ kg} = 90 \text{ kg} \quad \checkmark\text{C}$ $10 \times 0,05 \text{ kg} \times 15 = 7,5 \text{ kg}$ $\text{Total/Totaal} = 723 \text{ kg} \quad \checkmark\text{CA}$ $\text{Half ton} = 500 \text{ kg} \quad \checkmark\text{A}$ $\text{Not valid cannot fit into a half-ton bakkie.} \quad \checkmark\text{O}$ $\text{Nie geldig, dit is meer as die halfton.}$ OR/OF $12,5 \text{ kg} \times 15 = 187,5 \text{ kg}$ $5 \text{ kg} \times 30 = 150 \text{ kg} \quad \checkmark\text{M}$ $10 \text{ kg} \times 15 = 150 \text{ kg}$ $6 \times 15 \text{ kg} = 90 \text{ kg} \quad \checkmark\text{C}$ $\text{Total Weight} = 577,5 \text{ kg}$ $125 \text{ g} \times 48 \times 15 = 90\,000 \text{ g}$ $400 \text{ g} \times 12 \times 10 = 48\,000 \text{ g}$ $50 \text{ g} \times 10 \times 15 = 7\,500 \text{ g}$ $\text{Total Weight} = 145\,500 \text{ g}$ $= 145,5 \text{ kg} \quad \checkmark\text{C}$ $\text{Total} = 577,5 \text{ kg} + 145,5 \text{ kg} \quad \checkmark\text{M}$ $= 723 \text{ kg} \quad \checkmark\text{CA}$ $\text{Half Ton} = 500 \text{ kg} \quad \checkmark\text{A}$ $\text{Not Valid.} \quad \checkmark\text{O}$	1M multiplying by quantity 1C conversion g to kg 1M adding all values 1C conversion ℓ to kg 1CA simplification 1A half ton value 1O conclusion OR/OF 1M multiplying by quantity 1C conversion ℓ to kg 1C conversion g to kg 1M adding all values 1CA simplification 1A half ton value 1O conclusion(7)	M L4

<p>* 1.1.3</p>	<p>Total cost of items where VAT must be added <i>Totale koste van items waar BTW bygevoeg moet word</i></p> <p style="text-align: right;">✓MA</p> <p>= R1274,85 + R689,70 + R4 154,85 + R1499,85 = R7 619,25 ✓A</p> <p style="text-align: right;">✓MCA</p> <p>VAT amount /BTW-bedrag = R7 619,25 × 15% = R1 142,89 ✓A</p> <p>Total amount/<i>Totale bedrag</i> = R7 619,25 + R1 142,89 + R1679,85 + R1 559,50 + R1049,85 ✓MCA = R13 051,34 ✓CA</p> <p style="text-align: right;">✓A</p> <p>Wholesaler A/<i>Groothandelaar A</i></p> <p style="text-align: center;">OR/OF</p> <p>Total cost of items where VAT must be added <i>Totale koste van items waar BTW bygevoeg moet word</i></p> <p style="text-align: right;">✓MA</p> <p>= R1274,85 + R689,70 + R4 154,85 + R1499,85 = R7 619,25 ✓A</p> <p style="text-align: right;">✓✓MA</p> <p>R7 619,25 × 1,15 = R8 762,14 ✓MCA</p> <p>R8 762 + R1 679,85 + R1 559,50 + R1 049,85 = R13 051,34 ✓CA</p> <p>Wholesaler A/<i>Groothandelaar A</i> ✓A</p> <p style="text-align: center;">OR/OF</p>	<p>1MA adding items that are subject to VAT 1A simplification</p> <p>1MCA multiplying by 15% 1A simplification</p> <p>1MCA adding all values 1CA simplification 1A choosing wholesale A</p> <p style="text-align: center;">OR/OF</p> <p>1MA adding items that are subject to VAT 1A simplification</p> <p>2MA multiplying by 115% 1MCA adding all values 1CA simplification 1A conclusion</p> <p style="text-align: center;">OR/OF</p>	<p>F L3</p>
--------------------	--	--	-----------------

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	<p style="text-align: center;">OR/OF</p> <p>Total cost of items $= R1\ 679,85 + R689,70 + R4\ 154,85 + R1\ 274,85 +$ $R1\ 559,50 + R1\ 049,85 + R1\ 499,85 \quad \checkmark A$ $= R11\ 908,45$</p> <p>Excluding VAT exempted items $= R11\ 908,45 - R4\ 289,20 \quad \checkmark MA$ $= R7\ 619,25 \quad \checkmark A$</p> <p>VAT amount $= R7\ 619,25 \times 15\% \quad \checkmark MA$ $= R1\ 142,89 \quad \checkmark A$</p> <p>Total amount $= R11\ 908,45 + R1\ 142,89$ $= R13\ 051,34 \quad \checkmark CA$ Wholesaler A/Groothandelaar A $\checkmark A$</p> <p style="text-align: center;">OR/OF</p> <p>Items that attract VAT: $\checkmark MA$ Without VAT + 15% VAT = Including VAT $R1\ 274,85 + R191,23 = R1\ 466,08$ $R689,70 + R103,46 = R\ 793,16$ $R4\ 154,85 + R623,23 = R4\ 778,08 \quad \checkmark A$ <u>$R1\ 499,85 + R244,98 = R1\ 724,83$</u> $R7\ 619,25 + R1\ 142,89 = R8\ 762,14 \quad \checkmark CA$</p> <p>VAT exempted items $= R1\ 679,85 + R1\ 559,50 + R1\ 049,85$ $= R4\ 289,20 \quad \checkmark A$</p> <p>Total including VAT $= R8\ 762,14 + R4\ 289,20 \quad \checkmark MCA$ $= R13\ 051,34 \quad \checkmark CA$</p> <p>Wholesaler A/Groothandelaar A $\checkmark A$</p>	<p style="text-align: center;">OR/OF</p> <p>1A simplification</p> <p>1MA subtracting items that have VAT 1A simplification</p> <p>1MA multiplying by 15% 1A simplification</p> <p>1CA simplification 1A conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1MA multiplying by 15%</p> <p>1A simplification</p> <p>1CA simplification</p> <p>1A simplification</p> <p>1MCA adding all values 1CA simplification</p> <p>1A conclusion</p> <p style="text-align: right;">(7)</p>	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 1.1.4	<p>2020 price /prys = R659,70 ✓RT</p> <p>2021 price /prys = R659,70 × 105,17% ✓M = R693,80649 ✓S</p> <p>2022 price /prys = R693,80649 × 105,3% ✓MCA = R730,57823.. = R730,58 ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>2020 price /prys = R659,70 ✓RT</p> <p>2021 increase/verhoging = R659,70 × 5,17% = R34,10649</p> <p>2021 price /prys = R659,70 + R34,10649 ✓M = R693,80649 ✓S</p> <p>2022 increase/verhoging = R693,80649 × 5,3% = R36,77714397 ✓M</p> <p>2022 price /prys = R693,80649 + R36,77714397 ≈ R730,58 ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>✓RT ✓M ✓MCA ✓✓CA R659,30 × 1,0517 × 1,053 = R730,58</p> <p style="text-align: center;">OR/OF</p> <p>2020 Unit price/Eenheidsprys</p> $= \frac{R659,70}{30} = R21,99 \quad \checkmark RT$ <p>2021 price /prys = R21,99 × 105,17% ✓M = R23,126883 ✓S</p> <p>2022 price /prys = R23,126883 × 105,3% ✓MCA = R24,3526... = R24,35 ✓CA</p> <p>or</p> <p>R24, 352607799 × 30 = R730, 58</p>	<p>1RT price 1M multiplying by 105,17% 1S simplification</p> <p>1MCA increasing with 5,3% 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1RT price</p> <p>1M adding 5,17% 1S simplification</p> <p>1M increasing with 5,3% 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1RT price 1M multiplying by 105,17% 1MCA increasing with 5,3% 2CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1RT price</p> <p>1M multiplying by 105,17% 1S simplification</p> <p>1MCA increasing with 5,3% 1CA simplification</p>	M L3

(5)

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 1.2.1 (a)	<p>Outer diameter /buitemiddellyn = 73 mm = 7,3 cm ✓C</p> <p>Circumference of a circle/Omtrek van 'n sirkel = $7,3 \times 3,142$ ✓SF = 22,9366 cm ✓CA</p> <p>Surface area of the label / Buite oppervlak van die etiket = circumference \times height/Omtrek \times hoogte = $22,9366 \text{ cm} \times 10,6 \text{ cm}$ = <u>243,12796</u> cm² ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>✓C ✓SF ✓MCA</p> <p>Surface area = $7,3 \times 3,142 \times 10,6$ = <u>243,12796</u> cm² ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>✓SF ✓MA</p> <p>Surface area = $73 \times 3,142 \times 106$ = 24312,796 mm² ✓CA = <u>243,12796</u>.. cm² ✓C</p>	<p>1C conversion</p> <p>1SF substitution 1CA simplification</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1C conversion 1SF substitution 1MCA multiply with 10,6 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1SF substitution 1MA multiply with 106 1CA simplification 1C conversion NPR</p> <p style="text-align: right;">(4)</p>	M L2
1.2.1 (b)	<p>Total length = circumference + overlap Totale lengte = omtrek + oorslag = $22,9366 \text{ cm} + 0,6 \text{ cm}$ ✓MCA</p> <p>= 23,5366 cm ✓CA</p>	<p>CA from 1.2.1 (a)</p> <p>1MCA adding to circumference</p> <p>1CA simplification</p> <p style="text-align: right;">(2)</p>	M L2

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 1.2.2	<p>Number of packs lengthwise / <i>Getal pakke in lengte</i> $= \frac{117}{29,2} \quad \checkmark \text{MA}$ $\approx 4 \quad \checkmark \text{R}$</p> <p>Number of packs width-wise / <i>Getal pakke in breedte</i> $= \frac{66}{21,9}$ $\approx 3 \quad \checkmark \text{CA}$</p> <p>Number of layers of packs height-wise / <i>Getal lae</i> $= \frac{50}{10,8}$ $= 4,63$ $\approx 4 \quad \checkmark \text{CA}$</p> <p>The first layer will have / <i>Onderste laag het</i> No packs / <i>pakke</i> $4 \times 3 = 12$ cans in a pack / <i>blikke in 'n pak</i> $= 12 \times 12$ $= 144$ cans / <i>blikke</i> $\checkmark \text{CA}$</p> <p>Number of cans in a crate / <i>Getal blikke in 'n krat</i> $= 144 \times 4$ $= 576 \quad \checkmark \text{CA}$</p> <p>Mass / <i>Massa</i> $= 576 \times 440 \text{ g}$ or $576 \times 400 \text{ g}$ $= 253\,440 \text{ g} \quad = 230\,400$ $= 253,44 \text{ kg} \quad = 230,4 \text{ kg} \quad \checkmark \text{CA}$</p> <p>Mass of the crate / <i>Massa van die krat</i> $= 280 \text{ kg} - 253,44 \text{ kg}$ or $280 \text{ kg} - 230,4$ $= 26,56 \text{ kg} \quad = 49,6 \text{ kg} \quad \checkmark \text{MCA}$</p> <p>Not valid / <i>Nie geldig nie</i> $\checkmark \text{O}$</p>	<p>1MA dividing 29,2</p> <p>1R round down</p> <p>1CA simplification</p> <p>1CA simplification</p> <p>1CA simplification</p> <p>1CA number of cans</p> <p>1CA mass of the shipment</p> <p>1MCA crate mass</p> <p>1O conclusion</p>	MP L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	<p style="text-align: center;">OR/OF</p> <p>Number of packs lengthwise /Getal pakke in lengte</p> $= \frac{117}{29,2} \approx 4 \quad \checkmark \text{MA} \quad \checkmark \text{S}$ <p>Number of packs width-wise/Getal pakke in breedte</p> $= \frac{66}{21,9} \approx 3 \quad \checkmark \text{CA}$ <p>Number of layers of packs height-wise/Getal lae</p> $= \frac{50}{10,8} = 4,63 \approx 4 \quad \checkmark \text{CA}$ <p>Number of packs in a crate/ Getal pakke in 'n krat</p> $= 4 \times 3 \times 4 = 48 \quad \checkmark \text{CA}$ <p>Number of tins in a crate / Getal blikke in 'n krat</p> $= 48 \times 12 = 576 \quad \checkmark \text{CA}$ <p>Mass / Massa = $576 \times 440 \text{ g}$ or $576 \times 400 \text{ g}$</p> $= 253\,440 \text{ g} \quad = 230\,400$ $= 253,44 \text{ kg} \quad = 230,4 \text{ kg} \quad \checkmark \text{CA}$ <p>Mass of the crate / Massa van die krat</p> $= 280 \text{ kg} - 253,44 \text{ kg} \quad \text{or} \quad 280 \text{ kg} - 230,4 \text{ kg}$ $= 26,56 \text{ kg} \quad = 49,6 \text{ kg} \quad \checkmark \text{MCA}$ <p>Not valid/ Nie geldig nie $\checkmark \text{O}$</p>	<p style="text-align: center;">OR/OF</p> <p>1MA dividing 29,2 1S round down</p> <p>1CA simplification</p> <p>1CA simplification</p> <p>1CA simplification</p> <p>1CA number of cans</p> <p>1CA mass of the shipment</p> <p>1MCA crate mass</p> <p>1O conclusion</p> <p style="text-align: right;">(9)</p>	
		[37]	

QUESTION/VRAAG2 [41 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.1.1	South East or SE/ <i>Suidoos of SO</i>	2A correct direction (2)	MP L2
* 2.1.2	$\checkmark\text{RT}$ Distance/ <i>Afstand</i> = 6,8 km – (0,19 + 3,2 + 2,1) km $\checkmark\text{M}$ = 1,31 km $\checkmark\text{CA}$	1RT all correct values 1M subtracting from 6,8 km 1CA simplification (3)	MP L2
2.1.3	$\checkmark\checkmark\text{A}$ Fort Street/ <i>Fortstraat</i>	2A correct street (2)	MP L2
* 2.1.4	$12 \text{ min} = \frac{12}{60} \text{ hour/uur} = 0,2 \text{ hour/uur}$ $\checkmark\text{C}$ Distance/ <i>Afstand</i> = Speed/ <i>spoed</i> × time/ <i>tyd</i> 6,8 km = speed/ <i>spoed</i> × 12 min $\checkmark\text{SF}$ $\checkmark\text{S}$ Speed/ <i>spoed</i> = $\frac{6,8 \text{ km}}{0,2 \text{ hour}} = 34 \text{ km/h}$ $\checkmark\text{CA}$	1C convert min to hour 1SF substitution 1S changing subject of the formula 1CA simplification (4)	MP L3
2.1.5	Distance/ <i>Afstand</i> = Speed/ <i>spoed</i> × time/ <i>tyd</i> = 36,5 km/h × $\frac{11}{60} \text{ h}$ $\checkmark\text{SF}$ = 6,69166667 km $\checkmark\text{A}$ Difference/ <i>Verskil</i> = 6,8 km – 6,69 km = 0,1083333 km $\approx 108,3 \text{ m}$ $\checkmark\text{CA}$	1SF correct values 1A distance CA simplification NPR if answer is in metre (3)	MP L3
* 2.2.1	$\checkmark\text{M}$ $\frac{10}{12}$ $\checkmark\text{C}$ $\checkmark\text{CA}$ Length = $(26 + \frac{10}{12}) \text{ feet/voet} = 26,83333... \text{ feet/voet}$ Area = $26,8333... \times 4 \text{ feet/voet}$ $\checkmark\text{SF}$ = $107,333... \text{ feet}^2/\text{voet}^2$ $\checkmark\text{CA}$ LESS THAN / <i>MINDER AS</i> $\checkmark\text{O}$ OR/OF Area/ <i>Opp</i> = 26 feet/ <i>voet</i> 10 inches/ <i>duim</i> × 4 feet/ <i>voet</i> $\checkmark\text{SF}$ = 104 feet/ <i>voet</i> 40 inches $\checkmark\text{CA}$ $40 \text{ inches/duim} = \frac{40}{12} = 3 \text{ feet/voet} 4 \text{ inches/duim}$ $\checkmark\text{C}$ Total area = 104 feet/ <i>voet</i> + 3 feet 4 inches/ <i>duim</i> $\checkmark\text{M}$ = 107 feet/ <i>voet</i> 4 inches/ <i>duim</i> $\checkmark\text{CA}$ LESS THAN / <i>MINDER AS</i> $\checkmark\text{O}$	1M adding 1C conversion 1CA simplification 1SF substitution 1CA simplification 1O conclusion OR/OF 1SF substitution 1CA simplification 1C conversion 1M adding 1CA simplification 1O conclusion	M L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	<p style="text-align: center;">OR/OF</p> $L = 26 \times 12 + 10 = 322 \text{ in/dm}$ $W = 4 \times 12 = 48 \text{ in/dm} \quad \checkmark C$ $\text{Area} = 322 \times 48 \quad \checkmark SF$ $= 15\,456 \text{ in}^2/\text{dm}^2$ $= \frac{15\,456}{12^2} \quad \checkmark CA$ $= 107,733 \text{ feet}^2/\text{voet}^2 \quad \checkmark O$ <p style="text-align: center;">OR/OF</p> $L = 26 \times 12 + 10 = 322 \text{ in/dm} \quad \checkmark M$ $W = 4 \times 12 = 48 \text{ in/dm} \quad \checkmark CA$ $\text{Area} = 322 \times 48 \quad \checkmark SF$ $= 15\,456 \text{ in}^2/\text{dm}^2$ $109 \text{ feet}^2/\text{voet}^2 \times 12^2 = 15\,696 \text{ in}^2/\text{dm}^2 \quad \checkmark CA$ $\text{Area} = 15\,456 \text{ in}^2/\text{dm}^2 \text{ which is LESS THAN/Minder as} \quad \checkmark O$	<p style="text-align: center;">OR/OF</p> 1M adding 1CA simplification 1C conversion 1SF substitution 1CA simplification 1O conclusion <p style="text-align: center;">OR/OF</p> 1M adding 1CA simplification 1C conversion 1SF substitution 1CA simplification 1O conclusion (6)	
2.2.2	$\text{Measured distance/gemete afstand} = 82 \text{ mm} = 8,2 \text{ cm} \quad \checkmark A$ $\text{Scale/Skaal : } 8,2 \text{ cm} : 25 \text{ feet/voet} \quad \checkmark M$ $1 \text{ cm} : \frac{25}{8,2}$ $1 \text{ cm} : 3,05 \text{ feet/voet} \quad \checkmark CA$ <p>[Accept distances from 8cm to 8,6 cm]</p>	1A measurement 1 M scale 1CA simplification (3)	MP L3
2.2.3	$\text{Rate per square foot /koers per vierkante voet}$ $= \frac{2188,71}{1045} \quad \checkmark RT \quad \checkmark M$ $= \text{C\$ } 2,09445...$ $\approx \text{C\$ } 2,09 / \text{foot}^2 \quad \checkmark CA$	1RT correct values M dividing by 1 045 1CA simplification NPR (3)	F L2
2.3.1	$\text{Annual rent} = \text{C\$ } 6000 \times 4 = \text{C\$ } 24\,000 \quad \checkmark MA$ $\text{Price to rent ratio/huurprysverhouding}$ $= \frac{\text{Average Property Price}}{\text{Average Annual Rent}} / \frac{\text{Gemiddelde Eiendom Prys}}{\text{Gemiddelde Jaarlikse huur}}$ $= \frac{\text{C\$ } 300\,000}{\text{C\$ } 24\,000} \quad \checkmark SF$ $= 12,5 \quad \checkmark CA$ Tumi should buy. / Tumi moet koop $\checkmark O$	1MA calculating annual rent 1SF substitution 1CA simplification 1O conclusion (4)	F L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L												
	<p style="text-align: center;">OR/OF</p> <p>Quarterly price=$\frac{300\ 000}{4}=75\ 000$ ✓MA</p> <p>Price to rent ratio $=\frac{75\ 000}{6\ 000}$ ✓SF</p> <p style="text-align: center;">= 12,5</p> <p>Tumi should buy. <i>Tumi moet koop.</i> ✓O</p>	<p style="text-align: center;">OR/OF</p> <p>1MA calculating quarterly price 1SF substitution 1CA simplification 1O conclusion</p> <p style="text-align: right;">(4)</p>													
2.3.2 (a)	<p>$P=\frac{3}{12}$ ✓RT ✓RT</p> <p>$=\frac{1}{4}$ ✓CA</p>	<p>1RT numerator 1RT denominator 1CA simplification</p> <p style="text-align: right;">(3)</p>	P L2												
* 2.3.2 (b)	<p>$IQR=Q_3-Q_1/IKO=K_3-K_1$ ✓M</p> <p>$14,25=17,89-Q_1$ $Q_1=17,89-14,25$ ✓SF $=3,64$ ✓CA</p>	<p>1M IQR formula</p> <p>1SF substitution 1CA simplification</p> <p style="text-align: right;">(3)</p>	D L3												
* 2.3.2 (c)	<p>Minimum: North America is lower than Africa ✓A <i>Minimum: Noord-Amerika is laer as Afrika</i></p> <p>Maximum: North America is lower than Africa ✓A <i>Maksimum: Noord-Amerika is laer as Afrika</i></p> <p style="text-align: center;">✓A</p> <p>Median North America (7,59) is lower than Africa ✓A <i>Mediaan: Noord-Amerika(7,59) is laer as Afrika</i></p> <p>It is better to own/buy a house in North America. <i>Dit is beter om 'n huis te koop in Noord-Amerika</i> ✓O</p> <p style="text-align: center;">OR/OF</p> <table><tr><td></td><td>North America</td><td>Africa</td></tr><tr><td>Min</td><td>2,11</td><td>2,36</td></tr><tr><td>Max</td><td>15,26</td><td>27,41</td></tr><tr><td>Median</td><td>7,59 ✓A</td><td>12,19</td></tr></table> <p style="text-align: right;">✓A ✓A ✓A</p> <p>It is better to own/buy a house in North America. <i>Dit is beter om 'n huis te koop in Noord-Amerika</i> ✓O</p>		North America	Africa	Min	2,11	2,36	Max	15,26	27,41	Median	7,59 ✓A	12,19	<p>1A minimum 1A maximum 1A median of North America 1A median 1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1A minimum 1A maximum 1A median of North America 1A median 1O conclusion</p> <p style="text-align: right;">(5)</p>	D L4
	North America	Africa													
Min	2,11	2,36													
Max	15,26	27,41													
Median	7,59 ✓A	12,19													
		[41]													

QUESTION/VRAAG3 [32 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduidelik	T&L
* 3.1.1	$C = -16\,302 + 15\,030 + 577\,196 + 297\,012 + 783\,526$ $= 1\,656\,462$	1MA adding all correct values 1A simplification AO (2)	F L2
* 3.1.2	$57\,730 \text{ million} = 57\,730\,000$ $P = \frac{4\,917\,029}{57\,730\,000} \approx 0,085$ <p style="text-align: center;">OR/OF</p> $P = \frac{4,917029}{57,73} \approx 0,085$	1C converting to number 1RT numerator 1CA denominator 1CA simplification <p style="text-align: center;">OR/OF</p> 1C taxpayers to millions 1RT numerator 1A denominator 1CA simplification P for rounding (4)	P L3
* 3.1.3	$\text{Mean/Gemiddelde} = \frac{577\,196\,000\,000}{2\,856\,043}$ $= R202\,096,397$ <p>Monthly mean/Maandelikse gemiddelde</p> $= \frac{202\,096,397}{12}$ $\approx R16\,841,37$	1RT correct values 1C conversion 1MA dividing by 2 856 043 1MA dividing by 12 1CA simplification (5)	D L3
* 3.1.4	$\text{Percentage assessed} = \frac{16 \text{ million}}{356\,199 \text{ million}} \times 100\%$ $= 0,00449 \%$ <p>Rounded this will be 0,0%</p> $\text{Persentasie aangeslaan} = \frac{16 \text{ miljoen}}{356\,199 \text{ miljoen}} \times 100\%$ $= 0,00449 \%$ <p>Afgerond sal dit 0,0% wees</p>	1RT correct values 1M percentage calculation 1CA simplification 1O explanation (4)	D L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.2.1	<p>Monthly taxable income / <i>Maandelikse belasbare inkomste</i></p> $= R26\,904,22 \times \frac{100 - 7,5}{100} \quad \checkmark \text{MA}$ $= R26\,904,22 \times 92,5\% \quad \checkmark \text{MA}$ $= R24\,886,40 \quad \checkmark \text{A}$ <p>Annual taxable income/<i>Jaarlikse belasbare inkomste</i></p> $= R24\,886,40 \times 12$ $= R298\,636,80 \quad \checkmark \text{CA}$ <p style="text-align: center;">OR/OF</p> <p>Monthly pension payable/<i>Maandelikse pensioen</i></p> $= R26\,904,22 \times \frac{7,5}{100} \quad \checkmark \text{MA}$ $= R2017,82 \quad \checkmark \text{A}$ <p>Monthly taxable income / <i>Maandelikse belasbare inkomste</i></p> $= R26\,904,22 - R2017,82$ $= R24\,886,40 \quad \checkmark \text{MA}$ <p>Annual taxable income/<i>Jaarlikse belasbare inkomste</i> =</p> $R24\,886,40 \times 12$ $= R298\,636,80 \quad \checkmark \text{CA}$ <p style="text-align: center;">OR/OF</p> <p>Annual gross salary/ <i>Jaarlikse bruto inkomste</i></p> $= R26\,904,22 \times 12$ $= R322\,850,64 \quad \checkmark \text{A}$ <p>Annual pension payable/<i>Jaarlikse pensioen</i></p> $= R322\,850,64 \times \frac{7,5}{100} \quad \checkmark \text{MA}$ $= R24\,213,80 \quad \checkmark \text{CA}$ <p>Annual taxable income/<i>Jaarlikse belasbare inkomste</i></p> $= R322\,850,64 - R24\,213,80$ $= R298\,636,84 \quad \checkmark \text{CA}$	<p>1MA subtracting 7,5%</p> <p>1MA calculating %</p> <p>1A simplification</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1MA calculating percentage</p> <p>1A calculating %</p> <p>1MA simplification</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1A simplification</p> <p>1MA calculating percentage</p> <p>1CA calculating %</p> <p>1CA simplification</p> <p style="text-align: right;">(4)</p>	F L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.2.2	<p>April price without VAT/prys sonder BTW</p> $= \frac{R172,50}{1,15} = R150 \quad \checkmark CA$ <p>VAT in March/BTW in Maart</p> $= R150 \times 14\% = R21 \quad \checkmark MCA$ <p>March price with VAT/Maart prys met BTW</p> $= R150 + R21 = R171 \quad \checkmark CA$ <p style="text-align: center;">OR/OF</p> <p>March Price with VAT/Maart prys met BTW</p> $= \frac{R172,50}{1,15} \times 1,14 \quad \checkmark MCA$ $= R171 \quad \checkmark CA$	<p>1MA dividing by 115%</p> <p>1CA simplification</p> <p>1MCA 14 % VAT</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>2MA dividing by 115%</p> <p>1MCA 114 % VAT</p> <p>1CA simplification</p> <p style="text-align: right;">(4)</p>	F L3
* 3.2.3 (a)	<p style="text-align: right;">$\checkmark \checkmark RT$</p> <p>Gauteng, WCape, KZN, ECape, Mpumalanga, Limpopo, NWest, Free State, NCape $\checkmark \checkmark A$</p> <p><i>Gauteng, WKaap, KZN, OKaap, Mpumalanga, Limpopo, NWes, Vrystaat, NKaap</i></p>	<p>2RT All Correct provinces</p> <p>2A correct order</p> <p style="text-align: right;">(4)</p>	D L2
3.2.3 (b)	<p>It is to show that all provinces are different (tax payers' population/filers and tax due to income), or Tax collected per province differ due to a number of factors (e.g. tax payers and percentage, tax assessed and percentage; tax payers salary). $\checkmark \checkmark A$</p> <p><i>Dit is om aan te toon dat al die provinsies verskil (belastingbetalers en belasting betaalbaar)</i></p> <p>Of <i>Belasting ingevorder verskil per provinsie as gevolg van verskeie faktore (b.v. belastingbetalers en persentasie, aangeslaande belasting en persentasie, belastingbetalers se salaris).</i></p>	<p>2A reason</p> <p style="text-align: right;">(2)</p>	D L4
* 3.2.3 (c)	<p>$\checkmark O$</p> <p>Not valid, percentage of North West is higher than that of Free State but the arrow is shorter $\checkmark \checkmark O$</p> <p>Or Free State tax assessed and percentage is lower than that of the North West, however the Free State arrow is taller.</p> <p>Or the arrow lengths vary according to the number of tax payers.</p> <p><i>Nie geldig nie, persentasie van Noordwes is hoër as Vrystaat maar die pyl is korter of Vrystaat se aangeslane belasting en persentasie is laer as Noordwes maar die Vrystaat pyltjie is hoër of die pyl lengtes varieer volgens die getal belastingbetalers.</i></p>	<p>1O not valid</p> <p>2O reason</p> <p style="text-align: right;">(3)</p>	D L4
		[32]	

QUESTION 4/VRAAG [40 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduidelik	T&L
4.1.1	Number of busses/ <i>Getal busse</i> $= \frac{250\,000}{13,2} \quad \checkmark \text{MA}$ $= 18\,939,39394 \quad \checkmark \text{A}$ $\approx 19\,000 \quad \checkmark \text{R}$	1MA dividing by 13,2 1A simplification 1R rounding (3)	D L2
4.1.2 (a)	Exchange rate A: <i>Wisselkoers A</i> $\frac{\text{R}50\,000\,000\,000}{\text{R}15,97} = 3\,130\,870\,382 \quad \checkmark \text{A}$ Exchange rate B: <i>Wisselkoers B</i> $\frac{\text{R}50\,000\,000\,000}{\text{R}15,966728} = 3\,131\,511\,979 \text{ euro} \quad \checkmark \text{A}$ Difference/ <i>Verskil</i> $= (3\,131\,511\,979 - 3\,130\,870\,382) \text{ euro} \quad \checkmark \text{MCA}$ $= 641\,597 \text{ Euro} \quad \checkmark \text{CA}$ OR/OF Exchange rate A: <i>Wisselkoers A</i> $\frac{\text{R}50 \text{ billion}}{\text{R}15,97} = 3,130870382 \text{ billion/miljard} \quad \checkmark \text{A}$ Exchange rate B: <i>Wisselkoers B</i> $\frac{\text{R}50 \text{ billion}}{\text{R}15,966728} = 3,131511979 \text{ billion/miljard} \quad \checkmark \text{A}$ Difference/ <i>Verskil</i> $= (3,131511979 - 3,130870382) \text{ billion/miljard} \quad \checkmark \text{MA}$ $= 641\,597 \text{ Euro} \quad \checkmark \text{CA}$	1MA dividing by exchange rate 1A simplification 1MA dividing by exchange rate 1A simplification 1MCA subtracting 1CA simplification OR/OF 1MA dividing by exchange rate 1A simplification 1MA dividing by exchange rate 1A simplification 1MA subtracting 1CA simplification (6)	F L3

Q/V	Solution/Oplossing	Explanation/Verduidelik	T&L
4.1.2 (b)	<p>✓O Exchange rate B, it gives a higher value (€641 597 ✓✓O more)/shows more money will be made for the taxis <i>Wisselkoers B, dit gee 'n hoër waarde ((€641 597 meer)</i></p> <p>OR/OF</p> <p>Exchange rate B, it is stronger against the Euro. <i>Wisselkoers B, dit is sterker teen die Euro</i></p>	<p>CA FROM 4.1.2(a) 1O choice 2O reason</p> <p>(3)</p>	F L4
4.1.3	<p>Total parts/ <i>Totale dele</i> = 4 + 5 + 75 = 84 ✓MA</p> <p>Using/<i>Gebruik</i> taxi = 15 000 000</p> <p>$\frac{75}{84} \times \text{total number of commuters} = 15\,000\,000$ ✓MA</p> <p>$\frac{75}{84} \times \text{totale aantal pendelaars} = 15\,000\,000$</p> <p>Total number of commuters /<i>totale aantal pendelaars</i> $= 15\,000\,000 \times \frac{84}{75} = 16\,800\,000$ ✓A</p> <p>Number not using a taxi / <i>Getal wat nie 'n taxi gebruik nie</i></p> <p>$= 16\,800\,000 - 15\,000\,000$ $= 1\,800\,000$ ✓CA</p> <p>OR/OF</p> <p>Train : Bus : Taxi / <i>Trein : Bus : Taxi</i></p> <p>4 : 5 : 75</p> <p>Not using a taxi/<i>Nie taxi gebruik nie</i> = 4 + 5 = 9 ✓MA ✓A</p> <p>Number not using taxi/ <i>Getal wat nie 'n taxi gebruik nie</i></p> <p>$= \frac{15\,000\,000}{75} \times 9$ ✓MA</p> <p>$= 1\,800\,000$ ✓CA</p>	<p>1MA simplification</p> <p>1MA working with ratio</p> <p>1A simplification</p> <p>1CA simplification</p> <p>OR/OF</p> <p>1MA adding</p> <p>1A simplification</p> <p>1MA working with ratio</p> <p>1CA simplification</p>	D L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	<p style="text-align: center;">OR/OF</p> <p>Not using a taxi/<i>Nie taxi gebruik nie</i> = $4 + 5 = 9$ ✓MA ✓A Using ratio/<i>Gebruik verhouding</i>: 9 : 75 n: 15 million/<i>miljoen</i></p> <p>$\therefore 75n = 9 \times 15 \text{ million/miljoen}$ ✓MA n = 1,8 million/<i>miljoen</i> or/of 1 800 000 ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>Not using a taxi/<i>Nie taxi gebruik nie</i> = $4 + 5 = 9$ ✓MA ✓A Using ratio/<i>Gebruik verhouding</i>: 9 : 75</p> <p>$15\,000\,000 \div 75 = 200\,000$ ✓MA $200\,000 \times 9 = 1\,800\,000$ ✓CA</p>	<p style="text-align: center;">OR/OF</p> <p>1MA adding 1A simplification</p> <p>1MA working with ratio 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1MA adding 1A simplification</p> <p>1MA working with ratio 1CA simplification</p> <p style="text-align: right;">(4)</p>	
* 4.1.4	<p>Distance to moon and back / <i>Afstand maan toe en terug</i> = $384\,402 \times 2$ ✓MA = 768 804 km ✓A</p> <p>Number of trips/<i>aantal ritte</i> = $\frac{19\,000\,000\,000}{768\,804}$ ✓MCA = 24 713,71117 ✓CA</p> <p>Valid, more than 24 000 ✓O <i>Geldig, dit is meer as 24 000</i></p> <p style="text-align: center;">OR/OF</p> <p>Distance travelled for 24 000 trips to moon and back <i>Afstand afgelê vir 24 000 ritte maan toe en terug</i> = $24\,000 \times 384\,402 \text{ km} \times 2$ ✓MA ✓MA = 18 451 296 000 km ✓✓A</p> <p>Taxis travel/ry 19 000 000 000 km</p> <p>Valid, it will more than 24 000 trips ✓O <i>Geldig, dit sal meer as 24 000 ritte wees</i></p> <p style="text-align: center;">OR/OF</p> <p>Kilometres travelled per trip/ <i>Kilometer per rit</i> = $19\,000\,000\,000 \div 24\,000 = 791\,666,6$ ✓MA ✓A</p> <p>One way distance /<i>Eenrigting afstand</i> = $791\,666,6 \div 2 = 395\,833 \text{ km}$ ✓MA ✓CA</p> <p>It is more than the distance to the moon. <i>Dit is meer as die afstand na die maan toe.</i> ✓O</p>	<p>1MA multiplying with 2 1A simplification</p> <p>1MCA dividing 1CA simplification</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1MA multiplying with 2 1MA multiplying 2A simplification</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1MA dividing by 24 000 1A simplification</p> <p>1MA dividing by 2 1CA simplification</p> <p>1O conclusion</p> <p style="text-align: right;">(5)</p>	M L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.2.1	<p>9 Jan 2015 to 9 Jan 2016 – 365 days/dae ✓A</p> <p>9 Jan 2016 to 9 Jan 2017 – 366 days/dae</p> <p>9 Jan 2017 to 9 Jan 2019 – 730 days/dae</p> <p>9 Jan 2019 to 3 Jan 2020 – 359 days /dae ✓A</p> <p>Total days/ Totale dae</p> <p>✓MCA</p> $= 365 + 366 + 730 + 359 = 1\,820 \quad \checkmark \text{CA}$ <p style="text-align: center;">OR/OF</p> <p>Total days / Totale dae</p> <p>✓A ✓A ✓MCA</p> $= 365 \times 5 + 1 - 6$ $= 1\,820 \quad \checkmark \text{CA}$	<p>1A number of days in full year</p> <p>1A days till 3 Jan</p> <p>1MCA adding</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1A number of days in full year</p> <p>1A days till 3 Jan (subtracting 6)</p> <p>1MCA adding 1</p> <p>1CA simplification</p> <p style="text-align: right;">(4)</p>	M L2
4.2.2	<p>Share price in cent/ aandeel prys in sent</p> $= 2063 - 1268 \quad \checkmark \text{MA}$ $= 795 \quad \checkmark \text{CA}$	<p>1MA subtracting converted amount</p> <p>1CA simplification</p> <p style="text-align: right;">(2)</p>	F L2
4.2.3 (a)	<p>Percentage change/Persentasie verandering</p> $= \frac{\text{New} - \text{old}}{\text{old}} \times 100\%$ $= \frac{2\,063 - 2\,138}{2\,138} \times 100\% \quad \checkmark \text{RT} \quad \checkmark \text{SF} \quad \checkmark \text{MA}$ $= -3,50795\% \dots \quad \checkmark \text{CA}$ <p>✓O</p> <p>Correct, it went down by 3,51% rounded to 2 decimal places.</p> <p>Korrek, dit het gedaal met 3,51% afgerond tot 2 desimale plekke</p> <p style="text-align: center;">OR/OF</p> <p>Percentage change/ Persentasie verandering</p> $= \frac{2063}{2138} \times 100\% \approx 96,49\% \quad \checkmark \text{A}$ <p>✓M ✓CA</p> $100\% - 96,49\% = 3,51\%$ <p>✓O ✓O</p> <p>Correct, it went down by 3,51%</p> <p>Korrek, dit het gedaal met 3,51%</p>	<p>1RT correct values</p> <p>1SF into the % change formula</p> <p>1MA % change calculation</p> <p>1CA simplification</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1RT correct values</p> <p>1A simplification</p> <p>1M % change calculation</p> <p>1CA simplification</p> <p>1O conclusion</p>	F L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	<p style="text-align: center;">OR/OF</p> <p style="text-align: center;">✓RT</p> <p>Amount /bedrag = $2\,138\text{ c} \times 3,51\%$ ✓MA $= 75\text{ c}$ ✓A</p> <p>Decrease / Afname = $2\,138\text{ c} - 75\text{ c}$ ✓CA $= 2\,063\text{ c}$</p> <p>Correct, it went down by 3,51% ✓O <i>Korrek, dit het gedaal met 3,51%</i></p> <p style="text-align: center;">OR/OF</p> <p style="text-align: center;">✓M</p> <p>Percentage change = $100\% - 3,51\% = 96,49\%$</p> <p>Share price = $2\,138\text{ c} \times 0,9649$ ✓RT $= 2\,062,9562 = 2\,063\text{ c}$ ✓A ✓CA</p> <p>It is correct. It was rounded to the nearest cent. ✓O <i>Dit is korrek. Dit is afgerond tot die naaste sent</i></p>	<p style="text-align: center;">OR/OF</p> <p>1RT correct values 1MA % change calculation from previous balance 1A simplification</p> <p>1CA simplification</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1M % change calculation 1RT correct values 1A simplification 1CA simplification 1O conclusion</p> <p style="text-align: right;">(5)</p>	
* 4.2.3 (b)	<p>Went down/Daal 2016, 2017, 2019, and 2020 ✓O</p> <p>Hence/Gevolgtlik $\frac{4}{5} \times 100\% = 80\%$ ✓O</p> <p>Statement is correct. ✓O <i>Bewering is korrek.</i></p> <p style="text-align: center;">OR/OF</p> <p>✓O ✓O Correct, share prices went down in 2016, 2017, 2019 and 2020 but went up 2018</p> <p>$\frac{4}{5} \times 100\% = 80\%$ ✓O</p> <p><i>Korrek, aandeel pryse het gedaal in 2016, 2017, 2019 en 2020 maar styg in 2018</i></p> <p>$\frac{4}{5} \times 100\% = 80\%$</p>	<p>1O reasoning 4 years going down</p> <p>1O verifying the percentage</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1O conclusion award with justification 1O reasoning 4 years going down 1O verifying the percentage</p> <p style="text-align: right;">(3)</p>	D L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2.4	<p>Buying / <i>koop</i></p> $= 5\,000 \times 1\,611 \overset{\checkmark \text{RT}}{=} 8\,055\,000 \text{ c} \overset{\checkmark \text{A}}{=} \overset{\checkmark \text{C}}{\text{R}80\,550}$ <p>Sell/ <i>verkoop</i></p> $= 5\,000 \times 2\,350 = 11\,750\,000 \text{ c} \overset{\checkmark \text{CA}}{=} \text{R}117\,500$ <p>Profit / <i>Wins</i> = $\text{R}117\,500 - \text{R}80\,550 = \text{R}36\,950 \overset{\checkmark \text{CA}}{=}$</p> <p style="text-align: center;">OR/OF</p> <p>Difference in price / <i>Verskil in prys</i></p> $= 2\,350 - 1\,611 \overset{\checkmark \text{RT}}{\text{c}} \overset{\checkmark \text{A}}{=} \overset{\checkmark \text{C}}{\text{R}7,39}$ <p>Profit / <i>Wins</i> = $\text{R}7,39 \times 5\,000 \overset{\checkmark \text{MCA}}{=} \overset{\checkmark \text{CA}}{\text{R}36\,950}$</p>	<p>1RT correct values 1A buy 1C converting to rand</p> <p>1CA sell 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1RT correct values 1A difference 1C converting to rand</p> <p>1MCA multiplying 1CA simplification</p> <p style="text-align: right;">(5)</p>	F L3
		[40]	
	TOTAL/TOTAAL: 150		